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Minimal Pulmonary Tuberculosis: As a result of mass x-ray surveys during and since World War II, a new emphasis has been placed upon minimal tuberculous lesions of the lungs. Prior to World War II, most of the tuberculous lesions when first discovered were in an advanced stage. This made the prognosis for persons with tuberculosis grave because follow-up studies show that the majority of moderately or far advanced pulmonary lesions ultimately are the cause of death.

According to standards set up by the National Tuberculosis Association the minimal stage is defined as tuberculosis of no greater extent than "the equivalent volume of lung tissue which lies above the second chondrosternal junction and the spine of the fourth and the body of the fifth thoracic vertebra on one side." At the present time a large percentage of all tuberculous cases diagnosed are discovered in the minimal stage. The importance of the detection of tuberculosis while minimal lies in the fact that though the prognosis in advanced tuberculosis is poor, a great majority of patients with minimal tuberculosis make a lasting recovery.

The reason for the poor prognosis when the disease is beyond the minimal stage is that the spread tends to be in geometrical rather than arithmetical progression. Because the size and character of the lesion are usually directly related to the extent of endobronchial spread of Mycobacterium tuberculosis, the larger the lesion and the more it is excavated, the greater the opportunity for such spread. This in turn results in still larger regions of infection.

Within the past six years many millions of people have been examined in an expanding number of x-ray surveys, using the rapid photofluorographic technic. A large percentage of these surveys is at present under the auspices of the U. S. Public Health Service. The most extensive surveys have been conducted by the Armed Forces. Approximately 23 million people were given chest x-ray examinations by joint Army-Navy induction stations during World War II. Approximately 14 million of those accepted have been demobilized and with rare exceptions they were examined again by x-ray before discharge.

In the Army-Navy induction surveys, the primary purpose of which was to exclude from military service those with evidence of pulmonary tuberculosis, many thousands of cases still in the minimal stage were detected. Many communities took full advantage of the detection of these cases. Medical treatment was arranged for those affected, and spread of the disease to others was prevented. The present decline in death rates from tuberculosis may be due in large part to the results from the mass x-ray surveys of the Armed Forces.

In mass x-ray surveys, of the lesions that fall in the "minimal" category, there are many that are clearly active, others that are clearly completely healed, and a fairly large group in which it is difficult to determine whether the disease is active or not.



Activity can be determined if it is possible to examine films taken over a period of several months and studied for the presence or absence of change in the lesion. If facilities are readily available for sputum examinations and erythrocyte sedimentation rates, further information concerning activity sometimes may be obtained. However, in minimal disease the laboratory data are often indecisive. It is then customary to rely solely on the radiological appearance of the lesion to determine activity. In surveys performed for military selection, because lesions found on x-ray are often very small, the laboratory data noncontributory, and decisions cannot be long delayed, the roentgenographic appearance of the lesion must constitute the basis for a diagnosis of activity.

Inasmuch as the Navy may be expected to face this problem for some time, the Office of Naval Research is sponsoring a study undertaken by the Henry Phipps Institute concerning (1) the reliability of radiological diagnosis of clinical activity and (2) the factors responsible for spontaneous arrest of minimal disease.

An analysis was made of 1127 cases of minimal pulmonary tuberculosis with particular reference to the original diagnosis and the classification of activity which was based upon roentgenographic appearances. The patients had been followed for 20 years at Henry Phipps Institute. Rigid standards were set up for the classification of cases with respect to activity as indicated by the follow-up. Progression rates and death rates for 5 years of follow-up were then calculated for the separate groups of cases originally diagnosed as active, inactive, or questionably active, each group being further subdivided by sex and race. In most cases the original diagnosis was made by reading a single pair of stereographic films; a certain amount of clinical history including age, sex, and race was also available, but not pertinent laboratory data. Determining factors in the roentgenographic diagnosis were the characteristics of the infiltration including its flocculence or strand-like nature. A high degree of accuracy was observed in the original diagnosis of inactivity, as well as a good if not quite as striking accuracy in the original diagnosis of activity. Both original diagnoses were accurate enough so that an immediate decision concerning treatment or observation could be made, with more than reasonable assurance that the course prescribed was correct.

In determining the factors in arrest of activity in cases in which activity had been proved to be present at the time of diagnosis, the economic status of the patient was of greater statistical significance than the amount of rest or the amount of treatment the patient had had and appeared particularly important in the Negro group. The economic factor included the status of finances, nutrition, housing, and other circumstances, making analysis quite complex. In general, it was reflected in a standard of living which in total exerted a favorable or unfavorable influence upon the course of the disease. Thus tuberculosis is becoming predominantly a disease of the underprivileged. This furnishes leads for the employment of economic measures to influence the course of existing lesions and also to prevent spread to healthy persons.



An extensive program based on early diagnosis and proper care of minimal tuberculosis will be highly important as a step toward the ultimate eradication of the disease. (Research Reviews, ONR, 15 Jul '48 - E. R. Long)

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The Use of Adrenal Cortical Hormone in Radiation Sickness: Radiation sickness represents a symptom complex composed as follows:

General. Headaches, dizziness, weakness, and occasionally fever.

Gastro-Intestinal. Anorexia, nausea, vomiting, diarrhea, and tenesmus.

Cardiovascular. Tachycardia, arrhythmia, and fall in blood pressure.

Hematological. Leukopenia, thrombopenia, and increased sedimentation rate.

Psychic. Irritability, insomnia, and fear.

The symptomatology of radiation sickness points to adrenal cortical insufficiency. Further signs in this direction can be found in a study of the metabolic changes occurring in the irradiated body. Most prominent among these are the loss of chlorides, disturbance of the water metabolism, decrease of blood cholesterol levels with increased fat deposits in the liver, and a biphasic response of the blood sugar and of the hydrogen-ion concentration in blood and tissues. Radiation sickness thus represents a typical case of the "adaptation syndrome" of Selye, i.e., the unspecific response of the body to stress, irrespective of its causation by chemicals, bacterial toxins, or physical agents. The course of the adaptation syndrome is largely determined by adrenal cortical activity. This modern concept of radiation sickness agrees perfectly with the long-accepted view of the cause of radiation sickness as a general intoxication due to tissue decomposition products.

Recent research has considerably clarified the nature of these toxic substances which might best be described as histamine-like in nature, if not histamine itself, for the following reasons:

(a) Histamine is capable of producing most of the symptoms of radiation sickness, including those of salt/water metabolism and cholesterol metabolic changes, which are prominent in radiation sickness.

(b) Histamine is also capable of producing fatty changes in the liver, as characteristic of the adaptation syndrome and as seen in various animal species following irradiation. The accumulated evidence indicates that these fatty changes in the livers of irradiated animals are largely produced indirectly as the result of tissue decomposition products. It has furthermore been demonstrated that fatty infiltration of the liver does not occur in adrenalectomized animals. This phenomenon is thus linked on the one hand to the production of the toxic substances resulting from radiation-induced tissue destruction and, on the other hand, to adrenal-cortical activity.



(c) Histamine is present in most organs of the mammalian body. Its liberation from these tissues following irradiation is easily understood. Besides, new formation of histamine from the amino-acid histidine, a protein component, has been demonstrated by the author by irradiation with cathode rays. Inasmuch as the secondary cathode rays are the biologically effective rays in roentgen irradiation, this process may account for certain phases of the intoxication process.

(d) There is ample evidence available indicating the circulation of histamine-like substances in the irradiated body. Segal demonstrated increased blood histamine levels in patients following x-ray treatment.

Knowledge of the etiology of radiation sickness has also been greatly enlarged by studies concerning the regulation of lymphatic tissue activity by the pituitary-adrenal cortical mechanism. Of particular interest are the observations by Dougherty and White that leukopenia following roentgen irradiation is at least in part due to the indirect action of tissue decomposition products. In mice receiving a dose of 10 r in total-body irradiation, a leukopenic response was observed. This dose also increased the secretion of pituitary-adrenal cortical hormone. Since irradiation of adrenalectomized animals failed to produce leukopenia, it appears that this is an indirect effect of radiation mediated via the pituitary-adrenal cortical mechanism. Larger doses, 200 r, however, produced a leukopenia in adrenalectomized animals also. In this instance the irradiation affects the lymphatic tissues directly.

Irradiation over the adrenals produces marked cortical changes, according to Engelstad and Torgersen, and leads to depletion of sudanophil substances in the cortex. Depletion of sudanophil substances is considered as an indication of increased activity of the gland. Torgersen was able to show that isolated irradiation of a rabbit's ear produced changes in the sudanophil fat content similar to those resulting from direct exposure of the adrenals, thus demonstrating the role of tissue decomposition products in producing this radiation effect. Patt and his collaborators found changes in the weight of the adrenals in mice corresponding to the loss in adrenal cortical cholesterol content, following total-body irradiation with doses corresponding to L.D. 50 and L.D. 100.

In summarizing, it may be stated that at present the mechanism of radiation sickness appears as follows: irradiation of a sufficiently large volume of the body results in the release, or photochemical production, of histamine-like substances, if not of histamine itself. These substances cause the anterior pituitary to secrete corticotropic hormone, which in turn stimulates adrenal-cortical activity. This stimulation may well result in exhaustion of the gland.

Because the use of desoxycorticosterone acetate (DCA), a synthetic hormone of the adrenal cortex, is known to counteract the mineral losses caused by adrenal-cortical insufficiency and is also known to play an important role in the inactivation of histamine, the use of DCA in the treatment of radiation sickness appears to be logical.



In recent studies, using mice, the author has obtained experimental evidence for the use of this preparation clinically. It was demonstrated that DCA protects the liver against radiation-induced fatty changes and that this liver-protecting action is accompanied by a decrease in the mortality rates produced by various sized doses of x-rays applied in total-body irradiation. It was demonstrated, furthermore, that both effects are dependent on the size of the daily dose of DCA; 0.5 mg. was found to be an optimal dose for daily administration.

Further studies were carried out by the author for 14 days on the spleen, bone marrow, and adrenal cortex in mice which were irradiated by 500 r in a total-body dose in one exposure, some of which were treated daily with 0.5 mg. DCA. The use of DCA caused no observable difference in the x-ray-induced effects in the spleen. In the bone marrow, however, a definite and statistically relevant difference was noticeable in the DCA-treated group. Similarly, a decreased depletion of sudanophil fat of the adrenal cortex was observed in the animals receiving DCA. The effect in the adrenals appeared only in the first week following irradiation. This seems to be explainable by the fact that in the further course the cortical fat content returned to normal, and that the method used did not permit a quantitative assay of increased amounts of fat beyond the already large amounts present in normal cortical tissues. Whether the failure to observe differences in the spleen similar to those observed in bone marrow is also due to the method of study or is a factual one cannot be decided at this point.

It appears that the administration of DCA prevents the exhaustion of the adrenal cortex caused by irradiation. According to Long, if the fall in the blood level of cortical hormone is prevented by injection of exogenous cortical hormone, then the pituitary does not respond.

It thus appears that the use of DCA represents a treatment of radiation sickness which strikes at the cause of this symptom complex.

A clinical study of the usefulness of DCA in the treatment of radiation sickness has been carried out under the supervision of the author at the Veterans Administration Hospital, Bronx, N. Y., in cooperation with Drs. B. Roswit and S. M. Glasser. Out of a series of 50 patients, all of whom exhibited nausea and/or vomiting, 37 were completely relieved of these symptoms. The details of this preliminary clinical study will be reported elsewhere. It appears logical to assume that DCA may be used in human beings whose entire bodies are accidentally exposed to lethal doses of ionizing radiations. (Radiology, Sept. '48 - F. Ellinger)

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Distribution of Gold in the Animal Body in Relation to Arthritis: Although gold and gold salts have had wide clinical application in diseases of the skin, in tuberculosis, and of late in rheumatoid arthritis, their mode of action is undetermined. Worth-while information about the pharmacology of gold salts has



been gained particularly through the application of a micro method developed by Block and Buchanan in the metabolic studies of Freyberg and associates as well as in the investigations by Denko and Anderson, Cortell and Richards, and Hartung and Cotter.

$\text{Au}^{198}$  (half life, 2.7 days) produced in a pile by the  $(n, \gamma)$  reaction was obtained from the Atomic Energy Commission with a specific activity of about 2.5 mc. per milligram. Radioactive gold sodium thiosulfate was synthesized from the radioactive gold and administered intravenously. The tissue samples and excreta were weighed and digested in nitric acid and hydrogen peroxide; the gold was then quantitatively removed by a process of electrodeposition developed by Dunn. The planchets with the radioactive gold were counted by means of a bell jar Geiger-Muller counter with a thin mica window. All data presented were corrected for half life.

Gold distribution experiments were carried out on 15 rats and 10 rabbits. A comparison of data for both species of animals showed great variance which is due to the greatly increased dilution of the administered dose in the rabbit. The average weight of the rats used was 150 Gm.; that of the rabbits equaled 2.5 kg. When correction was made for this factor the results were comparable, as can be seen in the table below.

TISSUE	RAT	RABBIT
Kidney	8.72	6.14
Spleen	1.14	2.3
Liver	.67	1.16
Synovialis	.67	.23
Tendon	.52	.38
Skin	.47	.28
Articular cortex	.45	.12
Heart	.21	.15
Muscle	.07	.03

Values expressed in per cent total dose injected per gram tissue.

The similar relative order is interrupted by the synovial sample in the rat, which may be falsely high.

Chemical arthritis was produced in 5 of the rabbits by the injection into the knee joint of one extremity of 0.5 c.c.

of a solution, composed of U. S. P. turpentine 3 parts and diethylether 1 part. This was repeated in 5 days. Ten days after initial injection the animals were given the radiogold thiosulfate by the intravenous route, and 5 days later the rabbits were sacrificed for assay after first being perfused with 0.89-percent saline. The rabbits had not been walking since 24 hours following the initial treatment. The joints were swollen to twice the normal size and were tender and hot to the touch.

On autopsy the synovialis showed proliferation to a moderate degree and the articular surfaces were dull and roughened.

In all cases the chemically inflamed tissues took up a significantly larger amount of gold salt than the normal tissues. From previous experience with the distribution of gold in the blood components it was known that the white blood cells contained considerable amounts of thiosulfate, and it was thought that this



fact might account for the higher level in the inflamed tissues; however, pure pus from sterile abscesses was found to have less activity per gram than the tissues under consideration, and in tissues such as bone and tendon large exudative responses were not noted. It was clear from this that even though the inflammatory elements might be responsible for part of the concentration they could not possibly account for all, and that in the presence of inflammation the tissues themselves soaked up more of this salt.

In view of these facts the authors questioned the specificity of this phenomena for joint structures. As a result it was found that apparently the reaction would occur outside of joints, for when the same chemical irritant was injected into muscle and a sterile abscess formed, the muscle wall of the abscess would also accumulate the salt. This perhaps makes the accumulation in the joints less noteworthy but nonetheless real.

A preliminary distribution experiment was carried out on a 57-year-old white woman with rheumatoid arthritis in a moderately advanced stage and of approximately ten years' duration. Pain upon motion was present in both knees; movement was only slightly restricted. The patient had never received chrysotherapy. She was given 1,010 microcuries of radiogold as the sodium thiosulfate salt, representing 2.5 mg. of gold. Twenty-four hours after administration, biopsy of the left knee was done; specimens of skin, superficial fascia and fat, deep fascia and fat, synovial fluid, synovial membrane, and muscle were taken. Of the tissues taken, the synovialis was by far the most active, with the synovial fluid next in activity. This indicates that in human beings with rheumatoid arthritis, the gold salts concentrate at least in the synovialis of affected joints. The synovialis was eighteen times higher in gold content than skin. If the gold-concentrating ability of human and rat skin are compared, the value (.014 percent) for synovialis is in the range expected for kidney on the basis that 18 times .47 (rat skin) equals 8.46 (value for rat kidney).

It is concluded that Au<sup>198</sup> is a suitable radioactive isotope for studying the action of gold on the animal body. Excretion and distribution data obtained with this isotope conform with previous observations using stable gold. Synovialis, tendon, and articular cortex in chemical arthritis show a greater uptake of gold than similar tissues of normal joints, and this was shown to be nonspecific because the muscle wall of sterile abscesses exhibits the same phenomenon. In the course of this work radioactivity was ascertained in several tissues in which the uptake of gold salts had not been demonstrated previously; these were the iris, aqueous and vitreous humors, and brain, all of which contained gold quantities in the order of  $10^{-4}$  percent of the injected amount per gram of tissue. (J. Lab. and Clin. Med., Sept. '48 - J. J. Bertrand et al.)



The Physiology of Fecal Continence: This report concerns the results of a study of the mechanism of fecal continence in normal adults. This mechanism is of particular importance to surgeons who have an interest in sphincter preservation in resections of the rectum for cancer.

Fecal continence, the ability to retain feces until delivery is convenient, is of two types: colonic and sphincteric. Colonic continence requires the plastic adaptation of the smooth muscle of the colon to the enlarging fecal mass. In the normal adult the usefulness of colonic continence is evident in the practically constant finding, by x-ray and sigmoidoscopy, of fecal material collected in the sigmoid above an empty rectum, without the aid of an anatomically demonstrable sphincter at the rectosigmoid junction. This type of continence, which is retained by the patient with a well managed abdominal colostomy, is entirely under the control of the autonomic nervous system and may be responsible for some of the functional results reported by those who favor sphincter preservation.

Sphincteric continence involves the retention of bowel contents by sphincteric contraction when the plastic adaptation of the colon reaches an end, and peristalsis begins. This type of continence is not a simple purse-string effect but a complicated and highly integrated mechanism.

The internal sphincter, a collection of smooth muscle fibers surrounding the upper portion of the anal canal, is a continuation of the circular muscle of the distal part of the rectum. It is entirely under the control of the autonomic nervous system. The external anal sphincter is composed of striated muscle which is under the control of the voluntary nervous system. It consists of two or three separate muscle bundles. When the anal canal is closed, the superficial portion of the external sphincter lies distal to the internal sphincter, and the deeper portion partially overlaps it; when the anal canal is dilated by the presence of a fecal mass or by the presence of an obturator, the two sphincters come to occupy more truly internal and external positions, although some overlap remains.

Goltz and Ewald found, in dogs, that the striated muscle of the external sphincter differs from that in other parts of the body in that it remains reactive to electrical stimulation for long periods after the removal of the lumbar and sacral portions of the spinal cord. In animals poisoned with curare, von Frankl-Hochwart and Froelich noted that the external sphincter reacts to stimulation long after other skeletal muscles have ceased to react. However, these findings have been only partially substantiated by the more recent work of Learmonth and Markowitz. Arloing and Chantre showed that there were no microscopic changes in the external sphincter 11 months after destruction of its nerve supply. Because of these findings it had been conceived that the external sphincter possessed nerve centers similar to those of the mesenteric plexus of Auerbach. The actual presence of such centers has been confirmed recently by Reuther.



The part played by the levator ani muscles in the maintenance of sphincteric continence is difficult to evaluate. Because these muscles have fibers running both radially and parallel to the anal canal, they have been described both as dilators of the anal canal and as having a sphincteric function.

The results of the author's experiments indicate that in normal individuals anal continence is the result of a fine coordination between the rectum and the external anal sphincter. This coordination is mediated through reflexes involving both the autonomic and somatic nervous systems and initiated by impulses which arise in the wall of the rectum. The receptor mechanism may lie within the mucosa of the rectum because the reflexes are abolished by the application of cocaine to the rectal mucosa, but more likely lies within the muscular wall. Inasmuch as the recto-anal reflexes become progressively more active the more distally the rectal stimulus is applied, it is probable that the receptor units, though present over the entire length of the rectum, increase in number from above downward.

Afferent fibers arising in the wall of the rectum probably normally communicate through the spinal cord with efferent fibers innervating the internal anal sphincter because its reflex is abolished during periods of "spinal shock." This reflex arc is independent of cerebral centers, for it is not abolished when the spinal cord is transected in the lower dorsal region. Because it eventually returns after destruction of the sacral cord in man and following resection of the spinal cord in experimental animals, it is also evident that spinal connections are not essential. The response of the internal sphincter to stimulation of the rectum is invariably one of relaxation and, perhaps, active dilatation of the anal canal, which is thus prepared for the passage of fecal material. Under normal circumstances the internal sphincter probably contributes something to the tonic closure of the anus in the absence of rectal stimulation. However, when the rectum is stimulated, whether the urge to defecate reaches conscious levels or not, the internal sphincter dilates, preparing the way for evacuation, and contributes nothing to the act of voluntary restraint.

The typical response of the external anal sphincter resulting from stimulation of the rectum is one of contraction. This reflex is mediated through the higher nervous centers and is therefore abolished by transection of the spinal cord. The typical external sphincter reflex was obtained in a patient who was asleep. He had no memory of desire to defecate when the rectal balloon was inflated. It is probable, therefore, that afferent impulses need not reach the level of consciousness. Study of fatigue curves of the external sphincter indicates that it is capable of maximal contraction for only very short periods and that voluntary contraction cannot usually be maintained by normal adults at a submaximal level for periods longer than one minute. Furthermore, Denny-Brown and Robertson have shown that with voluntary restraint there is no damping of waves of rectal contractions which are present when defecation is imminent. These facts indicate that the mechanism of sphincteric continence



involves only the external anal sphincter and the rectum. The former reflexly or voluntarily contracts to resist the propulsive force of the contracting colon and rectum. Because the external sphincter fatigues easily, the necessity for a close correlation between rectum and external sphincter is evident, and the rectum itself must, therefore, be considered an integral part of the sphincteric mechanism. The relatively slow propulsion of fecal material by peristaltic activity of the smooth muscle of the colon gives ample time for the rapidly acting striated muscle of the external anal sphincter to contract with appropriate force.

Loss of sphincteric continence will result from any type of injury which interferes with the function of the external anal sphincter. Surgical, puerperal, or traumatic injuries resulting in complete division of the external sphincter are the commonest causes of sphincteric incontinence. In these the divided muscle is unable to control the entire circumference of the anus. All other causes of sphincteric incontinence are essentially neurological in origin and operate by breaking up the coordination made possible by the nerve connection between the rectum and the external sphincter. This reflex coordination may be broken at any of its vulnerable points, the most common of which is transection of the spinal cord which prevents the completion of the reflex arc through higher centers.

It seems that when the sphincters are preserved following resection of the rectum for cancer, sphincteric continence may be lost in either of two ways:

(1) By injury to the somatic nerve supply (inferior hemorrhoidal nerves) to the external sphincter. This may occur when the sacrum is resected at or above the level of its third foramina. Similar injury may occur when the levator ani muscles are divided laterally to the rectum, for, the nerves are in close proximity to the inferior surfaces of these muscles.

(2) By destruction of the afferent fibers arising in the rectal wall. This is a matter of great practical importance and will be made the subject of a future communication. (Surg., Gynec. and Obstet., Sept. '48 - E. A. Gaston)

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Study on the Control of Diarrheal Disease: In recent years the development of potent insecticides, particularly DDT, made it possible to plan and carry out an experiment on a broad scale designed to answer the following questions:

(1) Can flies be controlled in urban populations by insecticidal methods under the limitations of action imposed by civilian life? (2) What effect, if any, will such control have on the acute diarrheal diseases of the community, particularly those caused by specific infection with the Shigella and Salmonella groups of micro-organisms?



The basic conditions required for making such a study were: an area with a significant amount of infectious diarrheal disease; a major fly problem; and a geographic location which would permit division of the human population along natural lines into two comparable areas, one to be treated, the other to be left untreated for purposes of comparison. This latter condition was essential, for it is known that variations in diarrheal disease rates greater than 100 percent occur from year to year and season to season.

Because Hidalgo County in the lower Rio Grande Valley of Texas seemed to fulfill all such basic needs, it was selected for study. The severe diarrheal diseases which occur in this area are much more common in the Latin-American residents. Consequently, for the purposes of study, the towns were divided so that this ethnic group would be approximately equal in each. At the same time, the towns to be treated with DDT were chosen on the basis of their proximity to each other in order to facilitate repeated coverage. Nine towns were included in the study.

Three factors for measuring the effect of fly control on human disease were decided upon. They were (1) prevalence of infection, (2) reported diarrheal diseases, and (3) reported mortality.

Prevalence of Infection. The chief easily identified agents causing diarrheal disease in man are the members of the Shigella and Salmonella groups of organisms. These infections are much more common among the Latin Americans of the area and, because the purpose of the study was to measure differences in amounts of infection, sampling was confined to this group. Each town was surveyed and blocks were selected for comparability and the presence of children under 10 years of age. Children of this age were selected for the study not only because of their higher infection rate but also because they cooperated more willingly in connection with the rectal swab cultures. Each town was expected to provide at least 100 stool cultures per month: 2 small towns - 100 each, 6 towns - 150 each, 1 town - 200, a total of 1,300 cultures equally divided between the 9 towns of the two areas. The size of this sample was based on general population surveys in other areas which indicated that an average infection rate of approximately 4 percent could be expected. Rectal swab cultures were taken, without the knowledge of the disease history of the child, up to the desired number in each town once a month.

Reported Diarrheal Diseases. Because of the inadequacy of official morbidity reports for diarrheal disease, a family history was obtained from all children from whom specimens were taken for culture purposes.

Reported Mortality. The regular reports on mortality from diarrheal disease, as recorded by physicians of the area, were used. These figures applied to the entire Latin-American population, whereas the first two measures were based on a sampling technic.



The entire study was carried out from March 1946 through February 1948. Residual DDT applications were used in the towns designated for this treatment until September 1947. At that time the treatment was discontinued in these towns and carried out through February 1948 in the towns previously untreated.

From the results of the study the answer was made clear for the question, "What effect, if any, will such control have on the acute diarrheal diseases?". In the area of high morbidity studied, a significant reduction in the amount of infection, disease, and death resulted from the degree of control established. The effect on Shigella infections was greater than on infections with the Salmonella group of organisms. Thus, fly control would have greater potential value as a health measure in those areas where Shigella infections predominate as a cause of acute diarrheal disease.

A more qualified answer must be given to the other question "Can flies be controlled in urban populations by insecticidal methods?" because in answering it affirmatively a very important practical question, "What is the best way to control flies?" is also raised. Flies can be controlled by insecticidal methods, but the reversal of the fly prevalence curves in a matter of days after the treatment areas were changed shows all too clearly that chemical insecticides are temporary expedients at best. The experience in this study has shown that something more basic, particularly the elimination of man-made breeding places, must be done if the full effect of fly control on disease is to be brought about. The place that insecticides should occupy in a fly-control program will not be clearly established until their use has been studied in conjunction with the various elements of sound municipal housekeeping. (Pub. Health Reps., 8 Oct. '48 - J. Watt and D. R. Lindsay)

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A Venturi Type of Aerosol Generator for Mosquito and Fly Control: Many insect-control problems arise in the Navy from time to time that are not readily solved through the use of the regularly recognized practices and methods.

Severe difficulties were encountered in eliminating the Aedes pandanii which breeds in the axils of the Pandanus tree, a type of vegetation that grew profusely in the jungles surrounding the base where the author was stationed.

In an attempt to solve the problem, a California ground aerosol generator was built according to specifications obtained from an article by T. G. Raley which appeared in the Mosquito News. The first of this type of aerosol generator was used on a jeep and proved so highly effective in the control of both adults and larvae of Aedes pandanii that another one was built and put in use.

The spraying or fogging was most effective when done between 1800 and 2100. It is believed that two factors enter into this: (1) the type of mosquito, the



Aedes pandanii, is most active at the above-mentioned time, and (2) the humidity is greatest, causing the fog to hang low to the ground and to remain effective for a long period of time.

The base covers approximately 400 acres with another 500 acres of jungle surrounding it, making a rather large area for control. It was found that by spot spraying or fogging, using the wind as a drifting agent, all areas heavily infested with mosquitoes could be covered in one and a half hours of fogging. This followed a regular route laid out to take advantage of the prevailing wind and to cover all areas from which complaints of infestation were received. From time to time new routing was made as complaints were received. Special attention was given to out-door movie areas, wards, dependents' housing areas, and barracks. Over a period covering parts of the dry and rainy seasons, satisfactory control was accomplished.

The venturi type of aerosol generator was also used in the control of flies. Located one-half mile directly up-wind from the station was a coral pit that was being used by several large activities as a garbage dump. The entire dump area was teeming with millions of flies. DDT (5 percent) spraying three times daily was used in the galley, and the screens were painted, but still the flies persisted. As a method of control the aerosol generator was tried. The results were excellent in the areas that could be reached, but because of the wind drift and the inaccessibility of some spots, all the areas could not be reached with the aerosol. To solve this problem, a portable aerosol generator that could be wheeled around in the galley and mess halls was built. A small Briggs-Stratton motor was placed on a two-wheel cart and the exhaust equipped with a venturi in accordance with the displacement of the motor. A tank was mounted above the motor for the solution of DDT. The entire machine could be handled with ease by one man. A 10-percent solution of DDT in diesel oil was used and the resulting fog achieved a 100-percent knockdown of flies within 15 minutes after use.

Fogging of the galley and mess halls with the aerosol once per day gave good control over the flies. At first the fogging was done at 1300, but it was found that the fog persisted for a longer time if dispensed early in the morning. Finding that 0830 was as convenient for the galley personnel as the former time, this was adopted as the routine time for treatment of the galley. Although the residual of flies did build up in 24 hours, it was found that anything affecting the supply of flies such as heavy rains, still days, etc., was immediately reflected in the number of flies found. No complaints were received of injury to the persons operating the aerosol generators, or of a diesel oil taste in the food. (As a routine practice all food is covered at the time of spraying.) Two mess halls and a galley feeding 1000 people can be treated in 30 minutes at an estimated cost of 50 cents per day.

The portable fogger has worked equally well in the control of mosquitoes and flies in wards, barracks, and homes. The DDT and diesel oil as dispersed



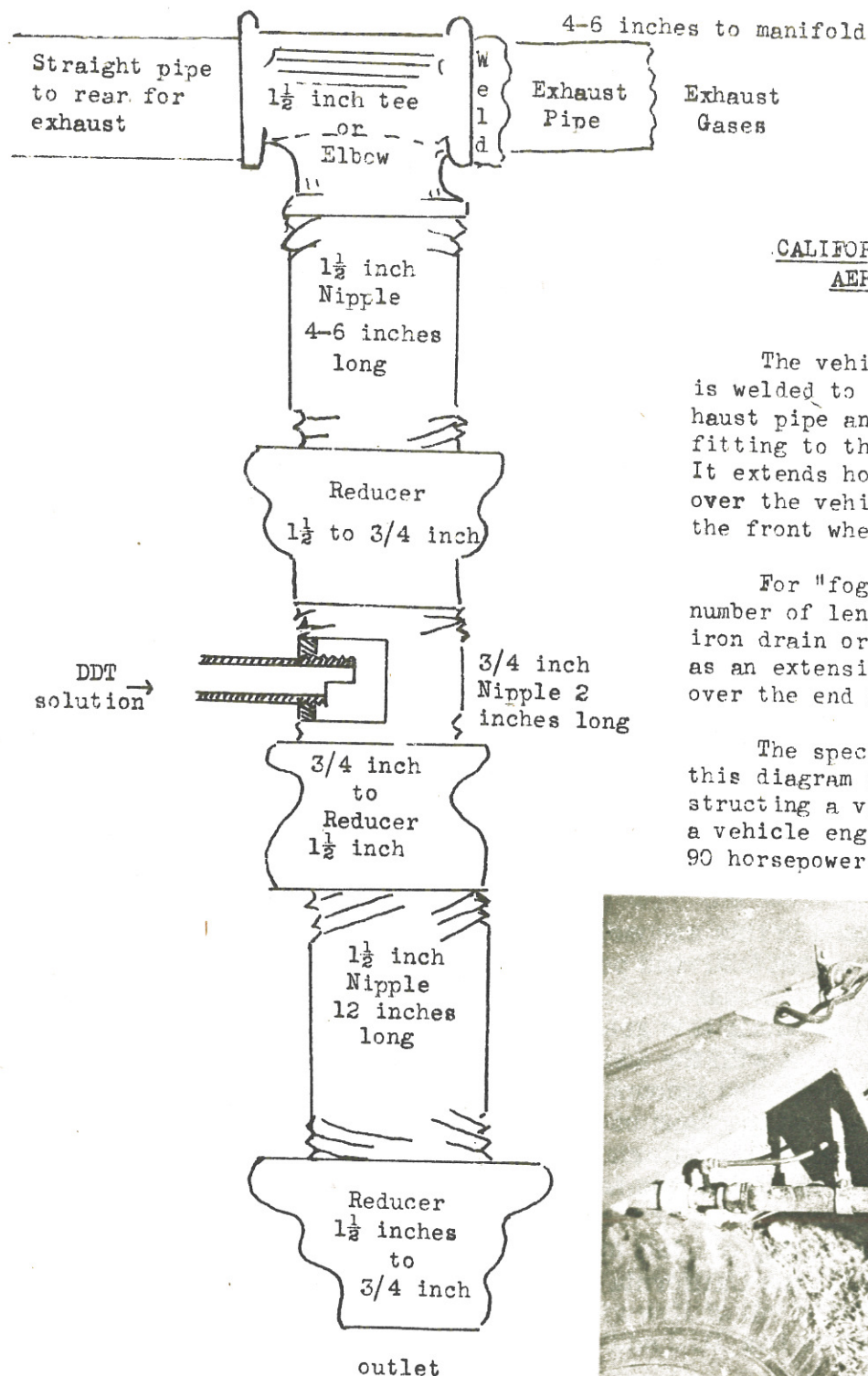
are in such fine suspension that no staining results unless the mouth of the venturi is brought within from 3 to 6 inches from an object. Motor oil which is used to make a heavy smoke for outside fogging is not employed inside buildings because its use would tend to make the aerosol more oily and therefore more likely to stain.

The descriptive diagram of the generator (see following page) for use on a motor of 90 horsepower shows the wide latitude possible in the position of the venturi throat by a simple shifting of pipe nipples. The position of the throat is very important. The particle size of the aerosol can be regulated by altering the distance of the first reducer from the engine manifold. The long nipple with the reducer cap acts as a reservoir, holding excess material until the exhaust heat and velocity are able to break it up. Some dripping will occur if the generator is too cold or if the motor speed is too slow. A control valve on the feed line will regulate the flow of material. The reservoir helps to prevent foliage burning at the mouth of the generator, especially when the truck slows to turn. The material is carried to the venturi by gravity and by suction action of the venturi. If desired, a straight pipe can be run from one side of the pipe tee to the rear of the vehicle for an exhaust when the venturi is not being used. When the venturi is in use the exhaust pipe can be capped and when running without fogging the venturi can be plugged. In this way excessive carboning in the venturi can be avoided. The pipe nipple of the feed line is very important; care must be taken to see that the feed nipple extends at least 1/4 inch into the venturi throat with half the extension cut away, and the resultant shield toward the exhaust flow. The jeep aerosol generator varies from the accompanying diagram in that 1 and 1/4-inch pipe fittings are used along with a 1/2-inch venturi throat and cap reducer. If excessive carboning is noted with this size venturi, a 3/4-inch throat can be used. In the construction of the portable aerosol generator venturi, 3/8-inch pipe was used in the throat with 1-inch fittings. From reports by civilian agencies using this type of generator and from the author's experience the installation and use of the venturi has caused no damage to the motors. The best result may be obtained by operating the jeep in compound low at from 5 to 8 miles per hour.

The material used in this aerosol generator can be any solvent capable of dissolving over 5-percent DDT and possessing a viscosity somewhat heavier than diesel oil. The author has used 10 gallons of S.A.E. 30 motor oil to 60 gallons of diesel oil to obtain this greater viscosity. A 10-percent solution of DDT in the above solvent with the addition of xylene or cyclohexanone sufficient to dissolve the required amount of DDT has been used with excellent results. If obtainable, a mixing tank of from 400 to 500 gallons is a real advantage in the preparation of the material for fogging. It is believed that the addition of a spreading agent to the finished solution would be desirable.

As an aid in the killing of adult mosquitoes and larvae, flies, and other insects affected by DDT, the California aerosol generator has the following advantages:



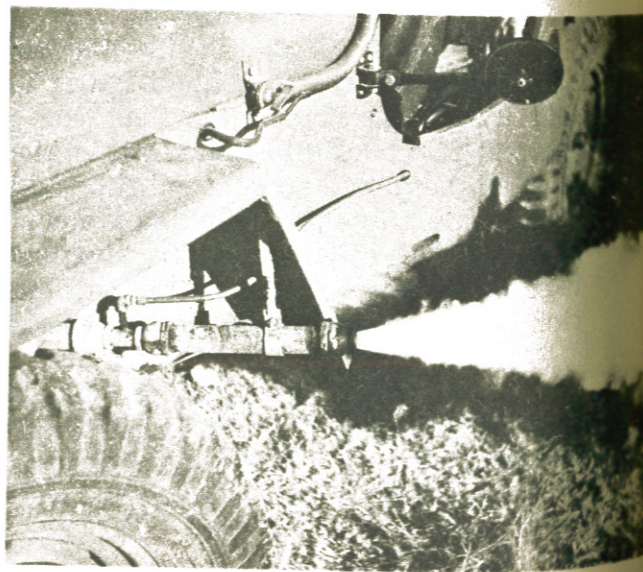


### CALIFORNIA GROUND THERMAL AEROSOL GENERATOR

The vehicle exhaust venturi is welded to a short piece of exhaust pipe and coupled by the usual fitting to the exhaust manifold. It extends horizontally under or over the vehicle frame, back of the front wheel.

For "fogging" buildings, a number of lengths of two-inch sheet iron drain or flue pipe may be used as an extension, by slipping it over the end of the venturi.

The specifications given in this diagram are for use in constructing a venturi to be used with a vehicle engine of approximately 90 horsepower.





1. Any area that can be reached by a truck can be treated with the aerosol generator.
2. With it, crews are less likely to miss spots than with the hand sprayers.
3. In use the generators create a favorable impression and comment among personnel for whom the benefits are planned.
4. The cost of building and maintenance is low; materials for the construction of the venturi are readily available at practically all stations.
5. The cost of the DDT used is low compared to the area covered.
6. Clearing of adult mosquitoes from any given area can be accomplished quickly and efficiently without interrupting the use of the area, which is particularly desirable, for example, in the case of outdoor movie areas. (R. Crowe, HMC, Epidemiology and Sanitation Technician, USN)

\* \* \* \* \*

M.R.C. Memorandum on Rh Factors: "The Rh Blood Groups and Their Clinical Effects" is an informative, brief, summary just published by the British Medical Research Council. Without evading descriptions of the more difficult points, this memorandum presents a clear picture of the clinical consequences of neglecting the Rh factors, and it puts subjects like the Rh subgroups and the peculiarities of Rh antibodies into their proper perspective.

After a very short historical introduction, the first section, by R. R. Race, describes briefly the various Rh groups. He points out that 95 percent of all dangers due to Rh blood groups are due to the original Rh group now known as D and its antibody anti-D, and he quotes the latest figures showing that in England 83.2 percent of the population are Rh-positive (D-positive) and 16.8 percent Rh-negative. There follows a brief but thorough description of the Rh subgroups and their genetic relationship according to the ideas of R. A. Fisher. Race rightly says that anyone who makes the effort necessary to master these groups has, at the same time, achieved at least an elementary knowledge of human genetics in general. In describing the Rh antibodies the term "blocking" antibodies is dropped, for it is not clear that this is, in fact, the action of these antibodies. What is known is that anti-D, the commonest Rh antibody, exists in two forms; one form will agglutinate red cells containing the antigen D (D-positive cells) when these cells are suspended in saline solution; the other will agglutinate them only if they are suspended in a protein medium, the best results being obtained with 20-percent bovine albumin. Cells exposed first to this albumin anti-D will not subsequently be agglutinated by the saline antibody; hence the term "blocking" or incomplete antibody. But when Diamond gave intravenous injections of Rh-positive blood to Rh-negative male volunteers, he found that the saline agglutinins appeared first, and that then with repeated doses they diminished



and eventually completely disappeared, being replaced by a rising titre of the antibodies detectable only in albumin suspension. Diamond, therefore, regards the albumin antibodies as "hyperimmune agglutinins." The authors of the M.R.C. memorandum adopt the noncommittal but descriptive terms "saline" and "albumin" agglutinins or antibodies.

In the second section P. L. Mollison deals with clinical considerations and covers more familiar ground. He details how immunization to Rh can be produced by transfusion of Rh-positive blood into Rh-negative persons or by a pregnant Rh-negative woman having a Rh-positive fetus. A less well-known fact is that the intramuscular injection of blood - e.g., for eczema - can produce lifelong immunization. Mollison emphasizes the importance of detecting Rh antibodies in the mother's blood because this is the best indication that the infant may be affected by hemolytic disease. Two examinations should be made, one early in pregnancy and one about six weeks before the expected date of delivery; the first examination reveals the presence or absence of sensitization before the particular pregnancy, for antibodies developing for the first time during a pregnancy rarely show before the fifth month. The clinical pictures of hemolytic disease and of the allied syndromes are described, and the various means of dealing with the situation and the question of advising parents about future pregnancies are fully discussed. The technical details of exchange transfusion provide useful practical points for workers in maternity hospitals.

In the third section, by A. E. Mourant, clinical pathologists will obtain comprehensive help in the practical details of Rh testing. (Annotation, Lancet, 25 Sept. '48)

**NOTE:** This M.R.C. Memorandum, No. 19 (74 pages), may be obtained by writing: H.M. Stationery Office, c/o British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. The cost is about 55 cents.  
--Ed.

\* \* \* \* \*

Concerning the Response of Tissue to Total-Body Irradiation: It has been fairly well established that the biologic effects brought about by any of the several types of ionizing radiations are essentially similar. Thus, the effect produced by penetrating external radiations is similar to the effect of internally-deposited materials, provided that equal amounts of roentgen units or roentgen equivalents are delivered to the tissue.

Any cell will be destroyed if it receives a sufficiently large dose of ionizing radiations. However, for reasons unknown, there are marked differences in the sensitivity of the various cells of a given species to radiation; and, even among cells of a single type in different stages of development there are marked differences in radiosensitivity. In general, in a given cell series, the cells in the early stages of mitotic division and blast cells are relatively radiosensitive and mature cells are relatively radioresistant.



It is of special interest that reticular cells of lymph nodes and bone marrow are relatively radioresistant. This fact has not been emphasized in the literature, but seems to be quite clear from the histopathology. For instance, in swine that have received heavy doses of total-body radiation reticular cells in the lymph nodules are prominent among the surviving cells. The radioresistance of reticular cells plays an important part in the recovery in borderline cases in which heavy doses of radiation have been received.

It has been reported that the radioresistance of various mature cells increases in approximately the following order: lymphocytes, germ cells, granulocytes, epithelium, endothelium, muscle, connective tissue, bone and nerve cells. In these cells all degrees of injury may be observed, depending on the stage of development of the cell at the time of injury, the degree of ionization accomplished and probably other factors.

The problem of interpretation of biologic response to radiation is further complicated by differences in species sensitivity. Guinea pigs, for instance, are radiosensitive, but rats are relatively radioresistant. Goats and swine fall somewhere between the two, within what is estimated as the sensitivity range of man.

It is important to grasp the concept of total-body irradiation in contrast to localized irradiation. An amount of radiation that is well tolerated when given locally might be sufficient to kill if administered simultaneously to the total body. For instance, it is estimated that from 300 to 600 r of total-body irradiation is the range of lethal dosage for man; yet doses up to 10,000 r may be given to an area up to 20 x 20 cm. with no more than transient radiation sickness characterized by nausea and perhaps vomiting.

A comparative study of the lesions occurring in swine after total-body exposure to ionizing radiations from the atomic bomb tests at Bikini and after total-body exposure to million volt x-radiations has been carried out. The lesions produced by the two types of exposure are found to be indistinguishable and to consist mainly of hemorrhage, necrosis, and secondary infection.

Hemorrhage is generalized and is caused by increased capillary permeability aided, perhaps, by a circulating anticoagulant. Dilatation of capillaries leading to hemostasis, edema, and anoxia tends to establish a self-perpetuating cycle which is abetted by the ever-increasing anemia.

Anemia is produced by hemorrhage into the tissues and into the hollow viscera and by destruction of the erythropoietic substances in the bone marrow. Phagocytosis of erythrocytes is increased. All of these factors acting conjointly produce a situation in which erythrocytes are expended without replacement.

The myelopoietic elements of the bone marrow and the lymphopoietic elements of spleen and lymph nodes are also highly radiosensitive. Their destruction interferes with the cellular defense of the body, and in the presence of lowered resistance secondary infections are common.



Although toxemia, resulting from accumulation of tissue breakdown products and/or absorption of intestinal toxins through the injured intestinal mucosa, would seem to be an important factor in radiation disease, there is no chemical proof or histologic evidence that it exists.

Because the reticular cells of the lymph nodes and bone marrow are radio-resistant, there is hope of recovery from doses of total-body radiation that would otherwise lead to death, provided that the impaired circulation can be improved and the body resistance to infection increased during the period of regeneration of the hematopoietic elements. (Proj. NM 007 039, Rep. No. 11, 22 July '48, Nav. Med. Res. Inst., Bethesda, Md. - J. L. Tullis)

\* \* \* \* \*

Speech Reception Testing: This paper is designed to assist the clinician who wishes to supplant the unreliable free-voice hearing test with one of the newer methods in which the helpful tools of electronics are used.

The most distressing source of unreliability in the traditional free-voice test is random fluctuation of over-all speech power level. Directions are given for controlling this variable with a handy portable instrument, the sound-level meter, and for reporting hearing deficit in terms of decibels below normal, rather than in terms of the relatively meaningless distance-fraction.

A further modification, which inserts a high-fidelity communication system between tester and patient, is described. Its advantage is that the tester monitors his voice and needs to speak at only one power level throughout. Very loud and very weak speech is produced by amplification and attenuation.

A fallacy of the monitored live-voice test is shown, in that equal power level of two words at a meter is not necessarily the same thing as equal intelligibility at the brain. Yet equal intelligibility of test words is one of the two most desirable characteristics of a word list for speech reception testing.

Equal intelligibility can be achieved by selecting words to that end. The best speech reception test so far available, that of Hudgins and his colleagues, offers a set of phonograph records with words of extremely homogeneous intelligibility. It is shown, however, that these words lack another necessary characteristic for an ideal test: they are not representative of speech sounds. They can, indeed, be heard quite well by a patient with serious hearing deficit in the upper half of the speech frequency range. They may therefore be considered to test speech acuity only in the lower speech registers.

The 20 Harvard Phonetically Balanced Lists, of 50 monosyllables each, on the other hand, fairly meet the requirement of representativeness. But the words within each list are inherently very different in intelligibility. The two requirements considered here, of representativeness and of homogeneity of



intelligibility, can, however, be secured. A Phonetically Balanced List, which meets the first requirement, may be treated in a re-recording technic so that the second requirement, likewise, is attained.

The Naval Medical Research Laboratory has prepared a number of such records and offers directions for using the technic and evidences of its worthwhile nature. (Proj. NM 003 021, Rep. No. 2, 21 July '48, Med. Res. Lab., U. S. Naval Sub. Base, New London, Conn. - J. D. Harris)

\* \* \* \* \*



Reserve Training Program Correspondence Course: In the 30 July News Letter, page 26, mention was made of the Reserve Training Program now being developed by the Bureau of Naval Personnel through the Naval Reserve Training Publications Project.

In this connection the Bureau of Medicine and Surgery is preparing material for use in a so-called correspondence course through which credit may be obtained by the Reservist toward the points necessary to complete a year of satisfactory Reserve service, under the provisions of Public Law 810 - 80th Congress, which includes promotion and retirement pay features.

The planning and preparation of the course for Medical Department Reserve officers are under the supervision of Captain W. E. Eaton, MC, USN, who has been designated Naval Reserve Training Project Officer as a special assistant to the Surgeon General.

The Bureau of Naval Personnel has approved the outline of the course for officers which is as follows:

## PART I - THE MEDICAL DEPARTMENT

### Chapter 1. Medical Department Orientation

- Section 1. Origin, mission, and organization
- Section 2. The Bureau of Medicine and Surgery
- Section 3. Personnel of the Medical Department
- Section 4. Facilities of the Medical Department

### Chapter 2. Medical Department Administration

- Section 1. Management Control
- Section 2. Technical Control
- Section 3. District Offices and Sea Frontiers
- Section 4. Clerical forms and procedures

## PART II - MILITARY-MEDICAL OPERATIONS

- Title I. Functions of officers of the several Corps
- Title II. Aviation Medicine Practice
- Title III. Submarine Medicine Practice
- Title IV. Combat and Field Medicine Practice
- Title V. Radiological Defense
- Title VI. Naval Preventive Medicine and Field Sanitation
- Title VII. Tropical Medicine in the Field



## PART III - MILITARY-MEDICAL ELECTIVES OR ALTERNATES

- Title VIII. Special Clinical Services - Medical and Dental
- Title IX. Clinical Laboratory Procedures - Medical and Dental
- Title X. Law and Government
- Title XI. Administration Procedures
- Title XII. Research - Medical, Dental, General, Special

Under each title, related subjects will be grouped, and monographs covering them will be available, separately or together, for reading and home study. A bibliography will be included so that the Reservist may do collateral reading on any subject if he wishes.

Because it is believed that officers of the regular service may also profit by reading the material, it is planned to make it available to them, also, on application. (Code 16, BuMed)

\* \* \* \* \*

Course in Medical Aspects of Special Weapons and Radioactive Isotopes Available to Reserve Officers: The Bureau of Medicine and Surgery announces a course of instruction in the medical aspects of special weapons and radioactive isotopes. The course is to be conducted at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland. It will commence on Monday, 6 December and continue through Friday, ~~10 December, 1948.~~

*25 April* *30 April 1949*  
The purpose of one phase of this course is to present the problems likely to be confronted and technics to be employed by the medical officer in the field of radioactivity.

The speakers scheduled are outstanding men in their specialties; hence an interesting and informative series is assured.

This course is conducted primarily for the benefit of inactive Reserve medical officers; however, a limited number of medical officers on active duty in the Washington area may attend, providing arrangements can be made by the individuals with their local commanding officers and the Medical Officer in Command of the Naval Medical School, Bethesda, Maryland.

Inactive Reserve medical officers who desire to attend this course should submit a request for training duty to the commandant of their local naval district. All requests should reach the commandant's office prior to 15 November 1948. The facilities available at the National Naval Medical Center make it necessary to restrict attendance to 200 Reserve medical officers. Sleeping quarters at the Center will be provided for many who wish such accommodations. Full messing facilities will be made available.

[It is planned that following this course a similar one will be given monthly through May 1949. The dates for the additional courses planned will be announced.]  
(Personnel Div., BuMed)

*LV J... 4653*



ALSTACON 051521Z

5 October 1948

Subj: Physical Standards for Commission for Women

Physical standards for the direct appointment of women to commissioned status in the line and various staff corps of the regular Navy shall be the same as physical standards for direct appointment of women to commissioned status in Women's Reserve United States Naval Reserve, as contained in Part II, Chapter 1 Manual Medical Department including Section 23 thereof.

--SecNav.

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Op24/cj, NT7/N21, Serial 457P24

3 September 1948

To: All Ships and Stations

Subj: Redesignation of U. S. Naval Dental Prosthetic Clinic, Washington, D. C.  
as U. S. Naval Dental Clinic, Washington, D. C.

Ref: (a) SecNav ltr Op24B/cj, Serial 567P24, of 15 Oct 1947; AS&amp;SL Jul-Dec 1947, 47-982, p. 99.

1. The following activity, established by reference (a), is hereby redesignated under a dental officer in command.

FromTo

U. S. Naval Dental Prosthetic Clinic  
Naval Gun Factory  
Washington 25, D. C. 2748-960

U. S. Naval Dental Clinic  
Naval Gun Factory  
Washington 25, D. C. 2748-960

This activity is under the military command and coordination control of the Commandant, Potomac River Naval Command, and is under the management control of the Bureau of Medicine and Surgery.

2. Logistic support for the naval personnel of this activity will be provided by the U. S. Naval Receiving Station, Washington, D. C.

3. Reference (a) is hereby canceled.

4. Bureaus and offices concerned take necessary action.

--SecNav.

John Nicholas Brown

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BUMED CIRCULAR LETTER 48-107

4 October 1948

To: All Naval Medical Activities

Subj: Tumor Registry, Naval Medical School: Specimens for

1. Specimens from all types of neoplasms removed at any naval activity shall be forwarded to the U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Maryland, for registration in the Tumor Registry maintained there.

2. A portion of the gross tissue in ten percent formalin or other suitable fixative is desirable, but if this is unobtainable, paraffin blocks or microscopic slides showing the lesion should be sent. If only a single section is available, a photomicrograph of the lesion will be made by the Tumor Registry and sent to the contributing activity, if requested.

3. Each case shall be accompanied by the following data:

- (a) Full name, status, serial number (if any).
- (b) Next of kin with address.
- (c) Pertinent clinical information to include age, sex, duration and site of tumor, leading symptoms and treatment.
- (d) Copies of necropsy (if performed) protocol or any histopathological reports.

4. The purposes of this registry are:

- (a) To compile a central file wherein data is available at any time for the Service at large.
- (b) To insure more adequate follow-up of all tumor cases and to facilitate the work of the Tumor Follow-up Section of the Naval Medical School.
- (c) To check on clinical diagnosis by histopathological methods.
- (d) To facilitate and augment instruction in oncology.

5. Each case received will be acknowledged by the Naval Medical School directly to the contributing activity, and a complete histopathological report will be forwarded.

--BuMed.

C. A. Swanson

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BUMED CIRCULAR LETTER 48-108

6 October 1948

To: MedOfComs, U. S. Naval Hospitals; U. S. Naval Medical Supply Depots;  
National Naval Medical Center, Bethesda, Md.; Naval Medical  
Center, Guam, M. I.



Subj: Civil Pay Roll, Time, Leave and Related Functions; Establishment of a Uniform Organizational Location of

Refs: (a) BuMed CirLtr No. 48-79  
(b) NCPI 125  
(c) NCPI 105  
(d) BuSandA Manual, Chap 5 Vol V and Chap 4 Vol VI

The purpose of this letter is to establish uniformity in the addressed activities with respect to the organizational location of and assignment of responsibilities in connection with the preparation and certification of civil pay rolls and the maintenance of time, leave, and related records, which are to be as follows:

#### FINANCE DIVISION

- (a) Prepare and certify pay rolls for civilian employees and maintain necessary records related thereto.
- (b) Maintain time and leave records for all civilian employees.
- (c) Maintain retirement records for all employees subject to the Civil Service Retirement Act.
- (d) Prepare the required reports and correspondence related to subparagraphs (a), (b), and (c).

#### PERSONNEL DIVISION

- (e) Furnish the Finance Division with notices of personnel actions and other issuances affecting pay of civilian employees such as revisions and/or amendments of wage schedules, etc.
- (f) Formulate and issue activity policies relating to the administration of regulations and instructions governing leave and hours of work.
- (g) Review application of regulations, instructions and activity policies relating to leave and hours of work (including investigation of suspected abuse of sick leave).

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BUMED CIRCULAR LETTER 48-109

6 October 1948

To: All Ships and Stations

Subj: Defective Medical and Dental Material; Reporting of

Ref: (a) BuMed CirLtr No. 47-116, dtd 29 Aug 1947; AS&SL Jul-Dec 1947, 47-796, p. 239.

1. Reference (a) is hereby cancelled and superseded.



2. A standard policy is hereby promulgated for reporting defective medical and dental material, listed in the Army-Navy Catalog of Medical Materiel, which is considered unsuitable or dangerous for use.

3. When any stock item is suspected of being injurious, defective, deteriorated, or otherwise unfit for use because of inherent characteristics, improper manufacture, or faulty or inadequate specifications, the activity holding such material, except naval medical supply depots and storehouses, shall submit a report by letter to Materiel Division, Bureau of Medicine and Surgery, 84 Sands Street, Brooklyn 1, New York, giving the following information:

- (a) Item stock number and title.
- (b) Document material was received on.
- (c) Date of receipt and source of supply.
- (d) Amount of stock apparently involved.
- (e) Lot number, when applicable.
- (f) Control number, when applicable.
- (g) Manufacturer's and/or contractor's name.
- (h) Statement as to the condition of other brands, other lot numbers, or other control numbers of the same item, if applicable.
- (i) Condition under which item has been stored locally which may have adversely affected it.
- (j) If the item is a drug or biological which has caused an untoward reaction upon administration, a description of the reaction shall be included.
- (k) Statement, setting forth in detail the specific defects necessitating the report.

4. A sample or samples as appropriate, if feasible, of the defective material shall accompany the report to Materiel Division, Bureau of Medicine and Surgery, Brooklyn 1, New York. If the item is a drug which is suspected of producing an untoward reaction, the offending unit, bottle, package, or box should be included in the shipment and so identified.

5. In the case of heavy equipment where the submission of samples is obviously impracticable, the statement required by paragraph 2(k) above should include recommendations as to parts that could be replaced to return the equipment to a usable condition. Where available, medical or dental repair personnel should be consulted in preparing this part of report.

6. Upon receipt of such information, together with samples of defective material in applicable cases, the Materiel Division, Bureau of Medicine and Surgery, will take necessary steps to have laboratory examinations performed by the Engineering Development Division of the Army-Navy Medical Procurement Office.

7. Following receipt of the results of the laboratory examinations of samples submitted or when corrective measures are determined, the holding activity will



be advised as to the disposition to be made of the material or corrective measures indicated.

--BuMed.

C. A. Swanson

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BUMED CIRCULAR LETTER 48-110 (Joint Letter)

6 October 1948

To: All Ships and Stations

Subj: Dishwashing Practice Aboard Naval Vessels

Refs: (a) BUSHIPS ltr JJ51-(3)(336-803), EN28/A2-11 of 21 May 1945; AS&SL Jan-Jun 1945, 45-586, p. 705.

(b) BUSHIPS Bulletin of Information #21, 1 Jan 1946, p. 54.

1. The Bureau of Ships is in receipt of a number of reports indicating the unauthorized use of trisodium phosphate in mechanical dishwashing machines. Such instances are considered a dangerous violation of instructions promulgated by reference (a).

2. The dangers inherent in the use of unapproved dishwashing detergents cannot be over-emphasized. It is well known that many communicable diseases are transmitted by unsanitary and improperly washed mess gear. Where trisodium phosphate is used as a dishwashing compound, tenacious insoluble coatings will be formed on dishes and dishwashing machines which, if permitted to remain, will provide a receptive medium for bacterial growth.

3. Navy dishwashing compound, developed as a result of extensive laboratory and service tests, is markedly effective in reducing communicable diseases because of its ability to leave mess gear physically and bacteriologically clean. This compound is procured under Navy Department Specification 51-C-49 and is available as a Standard Stock Catalog Item under Stock Number 51-C-1576-15.

4. Commanding officers are enjoined to enforce the use of Navy dishwashing compound in accordance with procedures prescribed in reference (b).

--BuShips. P. D. Gold, Jr.

--BuMed. C. A. Swanson

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BUMED CIRCULAR LETTER 48-111

7 October 1948

To: All Ships and Stations

Subj: Accounting Procedures for Unit Pricing of Medical Department Property



Ref: (a) BUMED CirLtr No. 48-52 dtd 7 May 1948; N. D. Bul. of 15 May 1948, 48-339.

1. Many naval activities are encountering difficulties in following prescribed plant account procedures for items of Medical Department equipment having a value of less than \$50.00.
2. To reduce to a minimum the necessity of making frequent changes in plant account records for items of Medical Department equipment having a value of \$50.00 or less, reference (a) is modified as follows:

Change subparagraph 4(B)(2)(b) to read:

"Thereafter account for each item of equipment in this category at the invoiced value at time of acquisition in both the Medical Department Equipment Ledger and on the pertinent plant account card. No change in book value will be required during the life of the item."

--BuMed. H. L. Pugh

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BUMED CIRCULAR LETTER 48-112

8 October 1948

To: Commandants, All Naval Districts, Potomac River Naval Command, and Chief, Naval Air Reserve Training Command.

Attn: District and Staff Medical and Dental Officers

Subj: Roster Report of the Hospital Corps, Inactive Naval Reserve (NavMed HC-4); Submission of

Ref: (a) Par. 518 Manual Medical Department, 1945.

This letter contains instructions concerning the dates on which the report is to be submitted and the information it is to contain.

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BUMED CIRCULAR LETTER 48-113

11 October 1948

To: Comdts, Naval Districts and River Commands

Subj: List of Regional Medical Directors, Public Health Service, Federal Security Agency



Ref: (a) U.S.P.H.S. ltr SR-LH to BuMed, dtd 14 Sep 1948

Encl: 1. (HW) Subject list.

1. By reference (a) the United States Public Health Service indicated a desire to have the enclosed information transmitted to naval installations with the assurance that the Public Health Service District Offices will do their utmost to facilitate solution of community health problems of interest to the Office of National Defense.

--BuMed. C. A. Swanson

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BUMED CIRCULAR LETTER 48-114

13 October 1948

To: Comdts, All Naval Districts and River Commands

Subj: Serologic Test for Syphilis. Request for Information on Its Use on Applicants for the Organized Naval and Marine Corps Reserve

Refs: (a) Par. H-1601, H-1604, BuPers Manual, Part H.  
(Instructions Pertaining to Naval Reserve) (Rev. 1947).  
(b) Par. 2182, 2184, M.M.D.

In this letter it is stated that the United States Public Health Service in cooperation with the Military Services is establishing a system for reporting individuals found to have venereal disease upon examination for enlistment or induction into the naval or military service, and the addressees are requested to furnish certain information upon which BuMed can base a decision on the feasibility of including within this reporting system applicants for enlistment or reenlistment in the Organized Reserve of the Navy and Marine Corps.

\* \* \* \* \*

ALNAV 67

11 October 1948

Subj: Personal Injury Claims by Civilian Visitors

Potential personal injury claims occasioned during visits naval vessels, particularly Navy Day, necessitate attention AlNav 547-46 which was:

"Increasing number claims injury civilian visitors, with potential litigation, particularly Navy Day occurrences, have been reported to JAG. Situation requires that commanding officers, in event physical injury experienced by civilian on naval vessel, follow as far as possible procedure prescribed Article 804, Navy Regulations, and Section 726, Naval Courts and Boards, in order to obtain full statements all witnesses to injury. Particularly important to have made as complete physical examination as possible of injured party. Original records and reports should be forwarded to JAG, attention Chief Admiralty Officer."

--SecNav.